BEFORE THE
POLLUTION CONTROL HEARINGS BOARD
STATE OF WASHINGTON

IN THE MATTER OF SCOTT PAPER COMPANY, Appellant, v. STATE OF WASHINGTON, DEPARTMENT OF ECOLOGY, Respondent.	PCHB No. 825 FINAL FINDINGS OF FACT, CONCLUSIONS OF LAW AND ORDER

This matter, the appeal of certain conditions of a National Pollutant Discharge Elimination System Permit issued by respondent, came before the Pollution Control Hearings Board, Chris Smith, Chairman, W. A. Gissberg, and Walt Woodward in Tacoma and Lacey, Washington on November 5, 6, 7, 12, 13, 14, 17, 18, 19, 20, 24, 25, and December 1, 3, 4, 5, and 9, 1975. Closing arguments were filed on January 15, 1976. Hearing examiner David Akana presided. A proposed Order was served upon each party. Exceptions to the proposed Order were timely filed by each party on April 21, 1976.

Appellant was represented by its attorneys, Allan J. Topol of Covington and Burling; Sherwood Willard of Scott Paper Company; and Charles R. Blumenfeld of Bogle and Gates. Respondent was represented by Charles W. Lean and Laura E. Eckert, Assistant Attorneys General. Eugene E. Barker, Olympia court reporter provided recording services.

Having heard the evidence, having examined the exhibits, having heard the arguments of counsel, having read the post-hearing briefs, and having considered the exceptions to the proposed Order, the Pollution Control Hearings Board makes the following

FINDINGS OF FACT

1. Over one-quarter of a century has passed since the State of Washington made its first efforts to require Scott Paper Company's plant at Everett "to provide a recovery process or some other means of eliminating sulfite waste liquor as a pollution factor in Port Gardner Bay . . . ." (See Exhibit R-34). This matter is a continuation of the battle over pollution.

2. Scott Paper Company (hereinafter "Scott") is a Pennsylvania corporation engaged primarily in the manufacture and sale of pulp, paper and paper products throughout the United States.

3. Scott is qualified to do business in the State of Washington. In this state, Scott operates a pulp mill at Anacortes and an integrated facility making pulp and paper at Everett. Only the Everett facility is involved in this case. It is located adjacent to Port Gardner Bay and near the mouth of the Snohomish River and downtown Everett and close to residential areas.

4. Scott began operation at Everett in 1951 when Scott merged

with the Soundview Pulp Company, which had begun pulping operations at Everett in 1932 with the installation of the Unit I pulp mill. In 1932, Unit I had a maximum production capacity of 270 tons of pulp per day. It used the calcium-base acid sulfite process rather than the ammonia-base acid sulfite process which is presently employed. The Unit II pulp mill was installed by Soundview Pulp Company in 1937, thereby increasing the overall pulp capacity of the facility to 570 tons per day. Like Unit I, Unit II originally employed a calcium-base acid sulfite process.

5. After the merger with Soundview, Scott began construction of the paper mill in 1952. The first paper machine started operation in December of 1953--with three additional paper machines commencing operation at approximately six-month intervals thereafter. In 1956, the Unit I pulp mill process was changed from calcium-base acid sulfite to soluble ammonia-base acid sulfite. The Unit II pulp mill underwent a similar conversion in 1968.

6. After 1956, various improvements in operation techniques and plant modifications enabled the Unit I and Unit II pulp mills to have a present total capacity of 850 tons per day. Unit I has a capacity of 400 tons per day and Unit II, 450 tons per day.

7. Scott's paper mill converts pulp to finished paper products. The mill consist of four paper machines with a capacity of 525 tons per day.

8. Approximately half the pulp produced at Scott's Everett facility is used in the paper mill at this facility. The remainder of the pulp produced at Scott's Everett facility is either sold to other

companies or shipped to other Scott mills. Most of the pulp not used in the paper mill at Everett is shipped outside the State of Washington to other parts of the United States or abroad.

9. The main pulping process employed at Scott's Everett facility, the ammonia-base acid sulfite process, is a full chemical acid sulfite process. It is one of the principal chemical pulping processes employed by the pulp manufacturing industry.

10. The acid sulfite process involves "cooking" of wood with chemicals under controlled conditions of temperature, pressure and time. This cooking is done in an acid solution in large vessels called "digesters." The primary chemicals employed consist of sulfurous acid together with a base chemical which can be calcium, magnesium, ammonia or sodium. This chemical cooking process frees the cellulose fibers, which become the pulp, from the lignin. The process results in a solution generally referred to as "spent sulfite liquor" (SSL) or "sulfite waste liquor" (SWL). At the present time, Unit I and Unit II at Scott's Everett facility employ ammonia as the base chemical in the cooking process.

11. Upon completion of the cooking process, the cellulose fibers, or unbleached pulp, must be separated from the sulfite waste liquor or SWL. This has traditionally been done through "blowing" the digester, i.e., discharging its contents under pressure into a "blow pit" where the SWL is extracted from the pulp mass by draining and repeatedly washing the pulp with water. After further washing to remove residual quantities of SWL, the pulp stock is then diluted and screened for removal of uncooked wood fragments. In pulp mill Unit I, the

traditional means of removing the SWL from the pulp mass is still employed.

12. After additional cleaning and thickening stages, the pulp is transferred to the "bleach plant." There it is bleached to increase its brightness (whiteness) and washed to remove impurities such as additional soluble and colored components. Pulp used for higher quality paper grades, such as those produced at the Everett facility's paper mill, requires extensive bleaching. The bleaching is done in three stages, involving chlorine, caustic extraction, and calcium hypochlorite. After the three-stage bleaching process, the pulp is ready for paper-making and is transferred to the paper mill, or dried and baled for shipment.

13. Prior to the imposition of pollution control requirements, the SWL removed from the pulp was discharged into the receiving waters.

14. Another principal chemical pulping process, known as the "Kraft" or sulfate process, also involves "cooking" of wood with chemicals under controlled conditions of temperature, pressure and time. The Kraft process uses an alkaline solution to cook the wood as opposed to the acid solution used in the ammonia-base acid sulfite process utilized at Scott's Everett facility.

In the Kraft or sulfate pulp manufacturing process, due to the costs of the chemicals used in the process, it is an economic necessity to put the spent cooking chemicals through a recovery unit to recover the bulk of the cooking chemicals for reuse in the pulping process. Thus, the recovery of the Kraft or sulfate chemicals has always been an integral part of the Kraft pulp manufacturing process.

In sulfite pulp mills using magnesium oxide as a base (as distinguished from ammonia which is used at Scott's Everett facility), recovery of the chemicals is an economic necessity and means have been developed for the recovery and reuse of base chemicals as part of the manufacturing process.

In the ammonia-base acid sulfite process, recovery of the cooking chemicals (which is referred to as SWL recovery) is not and has never been a necessary or economically desirable part of the pulp producing process.

15. The only reason for Scott to install SWL recovery at its Everett facility is for water pollution abatement.

16. In March, 1970, the Washington Water Pollution Control Commission, a predecessor agency to the Department of Ecology (DOE), and Scott settled an earlier contested case involving a waste discharge permit wherein Scott agreed to accept a new permit requiring removal of 80 percent of the SWL being discharged from the mill in two stages ending on July 31, 1978. The state waste discharge permit accepted by Scott (Permit No. T-3344) contained a waiver of Scott's right to appeal the SWL removal requirement for stage II, which would of necessity have to be incorporated in a future permit.

17. Scott has constructed the stage I SWL removal project at a cost of approximately $24,000,000. This system consists of pressure washers to separate the pulp from the SWL, evaporators which concentrate the SWL, and a large boiler in which the SWL is incinerated. A "scrubber" system which abates air pollution and recovers sulfur is

attached to the boiler. The permit at issue in this appeal contains a requirement for the stage II SWL removal project to be completed by July 31, 1978. Scott has not appealed this requirement, but has requested an extension of the completion date. Scott estimates that the cost of completing the stage II SWL removal project will be $40,000,000.

18. Prior to the start-up of the stage I SWL removal system in early 1974, Scott's Everett facility discharged approximately 907 pounds of biochemical oxygen demand (BOD) per ton of pulp based upon a production rate of 850 tons of pulp per day.

19. The stage I SWL removal system removes approximately 95 percent of the SWL from the Unit II pulp mill, and it reduced the total amount of BOD discharged from Scott's Everett facility from 907 to 539 pounds of BOD per ton of pulp.

20. The SWL discharged from Scott's Everett facility has a substantial five-day BOD. Other sources within the facility also contribute substantial BOD to the waste streams. Presently, Scott's Everett facility discharges an average daily BOD of 460,000 pounds into the receiving waters. After the completion of the stage II SWL removal project, it is estimated that the mill will discharge approximately 180,000 lbs/day of BOD into the receiving waters.

21. Scott could achieve a reduction in BOD discharged from 539 to 211 pounds of BOD per ton of pulp by constructing and installing the stage II SWL removal system which would remove approximately 95 percent of the SWL from the Unit I pulp mill.

Scott could also achieve approximately 211 pounds of BOD per ton of pulp by closing down the Unit I pulp mill.

22. There would be little difference between the stage I and the stage II SWL recovery systems because both use the same basic type and size of equipment. Because of this similarity, Scott could expand its total pulping capacity to 900 tons per day without increasing the SWL recovery systems capacity.

23. The stage II SWL removal system would take 36 months from the date at which a firm decision was made to construct the system until the system could be placed into operation. We find that the total capital cost of the stage II SWL system to be approximately $33,414,000 (1975 dollars). The total annual operating cost for the system is approximately $1,853,000 (1975 dollars).

Scott is committed, by a previous permit, to build the stage II SWL system. The matter now before us today concerns only the secondary treatment of wastes which has been imposed upon Scott by the terms of the National Pollutant Discharge Elimination System (hereinafter "NPDES") permit.

24. On March 14, 1975, the Washington State Department of Ecology issued NPDES Permit No. WA-000062-1 (hereinafter "the permit") to Scott covering wastes discharged from its Everett facility. The permit contains numerous conditions requiring compliance by Scott within specified time frames. Scott filed a timely Notice of Appeal of the permit with the Pollution Control Hearings Board.

25. The permit requires that Scott, by July 30, 1978, achieve daily average effluent limitations for BOD based upon 50 pounds of

BOD per ton of pulp production and 30.5 pounds of suspended solids per ton of pulp production. The permit also requires achievement of pH in the effluent of between 6.0 and 9.0 by July 30, 1978. These main conditions, and others, were appealed by Scott.

26. In order to reduce the BOD discharged at the Everett facility below 211 pounds of BOD per ton of pulp, it would be necessary for Scott to install biological treatment (which is sometimes referred to as secondary treatment) or alternatively, to arrange for some other disposition of its waste (such as to a municipal treatment system).

27. BOD, suspended solids, and pH are all parameters which measure the content of industrial waste.

BOD as a unit of measurement does not cause direct harm to the water. "BOD" is only a problem when it causes dissolved oxygen depressions in the receiving waters.

28. The purpose of biological treatment is to accelerate the removal of soluble and colloidal organics from effluent streams thereby reducing the BOD entering the receiving waters. There are four methods in common use today that can be used for biological treatment of wastes:

1. Oxidation pond,
2. Aerated lagoon,
3. Activated sludge system using air, and
4. Activated sludge system using oxygen.

The oxidation pond and aerated lagoon are less expensive to build and operate than either activated sludge system, assuming land is available at a reasonable cost.

29. Control technology exists which, if applied, will achieve the

effluent limitations in the permit for BOD, suspended solids, and pH at Scott's Everett facility. Control technology exists which would enable Scott to achieve a level of 31 pounds of BOD per ton of pulp at its Everett facility.

30. Scott is possessed of the technology of meeting the permit limitations of BOD and suspended solids through installation of an activated sludge biological treatment system using pure oxygen which would treat between a third and a half of its waste flows. Such a system would cost approximately $28,000,000 (1975 dollars).

31. Scott's Everett facility is a paper grade sulfite pulp mill as distinguished from dissolving grade sulfite pulp mills and the latter generally have higher BOD contents to their wastes. Depending upon whether one includes mills which are closing or changing their manufacturing process, there are 21 to 24 paper grade sulfite pulp mills in the country.

32. Five of the paper grade sulfite pulp mills utilize wastewater treatment which includes biological or secondary treatment in addition to removing or recovering SWL. One of these, a new mill, is achieving BOD levels of 9 to 11 pounds per ton of production in its effluent. The other four mills have treatment systems which remove 80 to 85 percent of the BOD remaining after SWL removal. A sixth mill has its wastes treated in a municipal system which provides biological treatment.

33. The "average of the best" wastewater treatment now being practiced at paper grade sulfite pulp mills consists of SWL removal plus biological or secondary treatment.

34. The Environmental Protection Agency's (EPA) "Pulp & Paper

Industry Effluent Limitation Guidance and Technical Documentation" (Respondent's Exhibit R-1) was prepared for use by EPA prior to adoption of effluent limitations guidelines. It recommends a single number effluent limitation for paper grade sulfite pulp mills of 35 pounds of BOD per ton of pulp production. All but three paper grade sulfite mills in the country have accepted NPDES permits containing this limitation.

35. The numbers in the Guidance document were derived prior to the passage of the Federal Water Pollution Control Act (FWPCA) Amendments of 1972; the Guidance was informally adopted by the EPA without compliance with the procedural formalities required by the FWPCA for guidelines; the Guidance failed to take into account a number of factors which are required to be considered by section 304(b) of the FWPCA; the Guidance number of 35 pounds of BOD per ton of pulp was based upon data taken from a single pulp mill, Crown Zellerbach of Lebanon, Oregon, which differs from Scott's Everett facility; the Guidance does not suggest the use of a BOD number of 50.

36. The WAPORA, Inc.'s document (Respondent's Exhibit R-2) does not suggest a BOD number of 50; the BOD numbers in the WAPORA document were obtained by averaging the BOD discharged from two separate mills--Crown Zellerbach at Lebanon, Oregon, and Boise Cascade at Salem, Oregon--which bear no identical relationship to Scott's Everett facility.

37. At the time the permit was issued in March of 1975, EPA had not issued final effluent guidelines which would be applicable to Scott's Everett facility, and the only EPA documents which the DOE had

in its possession were the Guidance documents, Respondent's Exhibits R-1 and 1-A, and the WAPORA document. With respect to the section 304(b) factors, the Guidance and WAPORA documents are deficient when applied to a specific mill; however, the documents, together with other DOE considerations, support DOE's conclusion that BPCTCA included secondary treatment.

38. DOE determined that the best practicable control technology currently available for paper grade sulfite pulp mills lies within a range of 35 to 60 pounds of BOD per ton of pulp production. The upper range determined by DOE as applicable to Scott's paper grade sulfite plant, i.e., 60, was taken from the Guidance document for dissolving grade sulfite plants.

39. Scott's Everett facility is "fundamentally different"[1] from all of the paper grade sulfite mills with respect to the facts that Scott has only limited land available for biological treatment; the land which Scott does have available for construction of a biological treatment plant is undesirable because of poor soil conditions.[2] Scott faces simultaneously the large capital expenditure for both an SWL removal system and biological treatment because Scott's Everett facility employs the ammonia-base acid sulfite process. SWL removal was not installed prior to the FWPCA when the focus was exclusively on water quality. Scott's Everett facility is located on a salt water environment in which there is no problem with the quality standards of the receiving waters as designated by DOE.

40. In determining that the BOD number in the permit should be 50, the DOE relied upon erroneous and/or incomplete information with

regard to a number of the 304(b) factors, including the cost of biological treatment at Scott's Everett facility; the electrical energy which would be consumed by biological treatment facilities; the extent of the solid waste disposal problem created by sludge from the biological treatment system; and the extent to which air pollution problems in the Everett area would be increased by the emission of particulates from an incinerator burning sludge from the biological treatment system should an incinerator be used.

41. In determining that the BOD number in the permit should be 50, the DOE did not consider facts relating to a number of 304(b) factors including, the amount of energy which would be required to produce chemicals for use in the biological treatment facility; the anticipated shortage in electrical energy in the Northwest region in 1978-1979 when the biological treatment facility would be installed; because of anticipated time delays, the feasibility of Scott participating in a regional or municipal treatment system; the possibility that Scott, itself, might find it economically necessary to shut down its Unit I pulp mill, in part, because of pollution control equipment (see Finding of Fact 44); the resulting economic impact in terms of loss of jobs and sales in other industries from a shutdown of the Unit I pulp mill at Scott's Everett facility. DOE did not consider these facts because, at or before the time of permit issuance, there was no indication from the applicant that a substantial problem existed. On remand, DOE may consider any additional information submitted by the applicant.

42. In determining that the BOD number in the permit should be 50, the DOE did not make any formal analysis of the "benefit" from

reducing the BOD from 211 to 50 which took into account, as was developed in the record, the non-water quality adverse environmental impacts, the drain on energy resources, and the economic considerations involved.

43. Because of lack of time, the DOE did not prepare any document analyzing the cost/benefit for water pollution control at Scott's Everett facility.

44. In order to keep Unit I in production by the terms of the NPDES permit, Scott would have to provide a SWL recovery system ($33,414,000 in 1975 dollars), certain modernization investments ($6,000,000), and secondary treatment of Unit I's effluents ($5,219,000 in 1975 dollars). The total investment necessary would be about $44,633,000. Of this total amount allocable to Unit I, 12 percent is a direct result of the secondary treatment requirements of the permit at issue; seventy-five percent of the total amount is attributable to pollution control devices not here contested. In addition, Scott would incur significant annual operating costs.

45. The costs of treatment in relation to the BOD reduction achieved are substantially greater to achieve a BOD number below 211 than they are to reduce BOD from 539 to 211 pounds of BOD per ton of pulp.

46. The Scott facility at Everett began pulping operations in 1932. In the industry as a whole, most mills are even older. The mill has been constantly modernized, and its age poses no unusual problems for waste treatment, except that its water use, which is substantial, is higher than most new mills would employ.

47. Operation of biological treatment facilities necessary to meet the permit's effluent limitations will create approximately 114 cubic yards of sludge per day. Scott expects to be able to dispose of this sludge by landfill. In a properly operated landfill, this material will cause no leachate or odor problems.

Disposal of the dewatered sludge by landfill requires trucking the dewatered sludge to a landfill site, possibly the Snohomish County Landfill. Approximately seven to ten truckloads per day would be required, depending upon the size of the truck.

48. The only other practical means of disposing the sludge is by incineration. Incineration of the sludge cake would reduce the solid waste disposal problem because only ash would be disposed of by landfill. However, in order to incinerate the dewatered sludge, energy must be supplied to burn it.

49. The cost of a facility to incinerate dewatered sludge would be approximately $3.0-$3.5 million.

50. If the sludge is disposed of by incineration, additional air pollution problems would result because the incinerator would emit particulate matter and, possibly, sulfur dioxide.

51. The proposed secondary treatment plant location is currently a ten-acre log storage area located in an industrial area. (Scott Exhibit 1, Miller Exhibit 2 and 3.) Installation of a biological treatment plant will foreclose the use of about ten acres for any other purpose. A suitable treatment plant can be installed at this site, but the limited land available for treatment will dictate the use of relatively more expensive treatment technologies such as the activated

sludge method of treatment.

52. If Scott had the land available for an aerated lagoon method of treatment, its cost to install a biological treatment system to achieve a BOD level of 50 pounds of BOD per ton of pulp would be between $15 and $20 million (1975 dollars).

53. The Everett facility consumes a significant amount of electrical energy, waste wood, and fossil fuel. Sulfite waste liquor, after treatment, is a source of energy and can be used to generate steam for use in the manufacturing process, thus saving substantial quantities of oil and natural gas.

54. If biological treatment were installed at Scott's Everett facility, electrical energy would be required to operate the biological treatment facility. This would result in the consumption of substantial quantities of electrical energy which otherwise would not be consumed if Scott discharged BOD at the level of 211 pounds of BOD per ton of pulp.

55. If the BOD discharged at Scott's Everett facility were reduced from 211 to 50 pounds of BOD as required by the permit, the biological treatment facilities would consume 23,600,000 kilowatt-hours (kwh) per year assuming that an activated sludge system using high purity oxygen were installed. If an activated sludge system with atmospheric air were installed, 22,300,000 kwh per year would be consumed. DOE's electrical energy estimates were substantially lower.

56. Scott's projected energy demand in 1978 for the biological treatment plant represents one-half of one percent of the total energy capacity of the local supplier in the area. Together with the stage I and stage II SWL systems, the total electrical energy consumption

relating to environmental pollution control would be one and one-half percent of the total available electrical energy in the area.

57. The northwest region of the United States, including the State of Washington, is facing a predicted shortage in electrical energy in the time period 1978 through 1983, which is when the biological treatment facilities required by the permit would begin operations.

58. The SWL removal projects involve the construction of large boilers, which even with installation of air pollution equipment, will result in additional emission of SO_2 to the air. However, if the boilers were not installed, Scott would have to burn additional amounts of oil and natural gas to generate heat for manufacturing. The relatively clean natural gas now used is becoming in shorter supply and may eventually become completely unavailable for use at this facility. Burning oil for heat generation also results in SO_2 emissions. As natural gas becomes in short supply, use of the SWL removal boilers may actually result in a net decrease in SO_2 emissions.

59. Installation of treatment facilities to meet the terms of this permit will not cause an unmanageable odor problem.

60. If a pure oxygen activated sludge biological treatment system is installed, there will be a short, sharp noise occurring approximately every ten minutes associated with the oxygen generation equipment. There was no persuasive evidence as to whether this noise would be a nuisance in residential areas, nor did the preliminary engineering work by Scott's consultants attempt to include any provision for suppressing or controlling this noise.

61. The older Puget Sound mills are the most vulnerable in the Northwest to pulp mill closings because large capital demand for pollution control abatement would trigger a predetermined decision to allow the mills to collapse, and because of a limited raw materials base.

62. Presently, the Unit I pulp mill is operating at approximately one-half capacity. If Scott closes Unit I, approximately 84 jobs would be lost at the Everett plant. If the plant was operating at full capacity, and was thereafter closed, 100 jobs would be lost upon plant closure.

63. The possible shutdown of Unit I is not a new idea. Scott has previously considered, and rejected, such a proposal. Historically, the Unit I pulp mill is one of Scott's more costly mills in terms of expenses incurred per ton of pulp produced. The requirements of the NPDES permit would increase the chance that Scott might close Unit I.

64. If Scott should close Unit I, the mill will possibly renew operation when and if the price of pulp is high enough to justify reopening the mill.

65. If Unit I of Scott's Everett facility closes, there would be a significant detrimental economic effect upon other businesses in the area. The detrimental effect cannot now be accurately assessed as to the extent of the effect or the dollar amount of the effect, but could involve, as an indirect impact, the loss of about 400 jobs.

66. The final decision on the stage II SWL system and secondary treatment system, insofar as investment therefor is concerned, will not be made by Scott until all of the requirements of the permit appear clear to Scott. Because of the additional requirement of a secondary

treatment system subsequent to Scott's projected SWL system, Scott deems it wise to carefully consider the economics of its capital expenditures.

67. Snohomish County is presently engaged in a regional study under the FWPCA to determine how Snohomish County will handle its wastes on a regional basis in the future.

68. If biological treatment were installed at Scott's Everett facility, this would result in the consumption of additional chemicals, the production of which involves energy, and would result in the utilization of additional natural resources.

69. To replace the capacity of Unit I, Scott estimates that it would cost about $80,000,000. Such a plant would use a Kraft process and would meet all current pollution standards.

70. Since the merger with Soundview and up to 1970, Scott has made several water pollution abatement-related expenditures but these expenditures are insignificant as compared to expenditures made in the period from 1970 to 1974. During this latter period, Scott spent approximately $24 million when it placed in operation the stage I SWL removal complex.

71. In terms of absolute dollars, Scott has spent more money for water pollution abatement at its Everett facility up to the present time than any other pulp mill in the State of Washington except for one mill which has exceeded Scott's expenditures by approximately $4 million.

72. Both on a capital cost basis and on the basis of cost per daily ton, the NPDES permit issued for Scott's Everett facility would require far greater expenditures, in terms of absolute dollars, than those required of any other mill in the State of Washington.

73. The estimated September, 1974 replacement value of waste-water controls installed by Scott at its Everett and Anacortes facilities exceeded the value of those installed by any other firm in the Pacific Northwest.

74. If Scott was required to achieve a BOD level of 211 pounds of BOD per ton of pulp, then the expenditures, in terms of absolute dollars, required of Scott would be approximately equal to those required of other mills in the State of Washington under their NPDES permits.

75. The earliest document prepared by anyone from the DOE which mentions a BOD number of 50 in connection with a permit for Scott's Everett facility is a memorandum from John Stetson to Richard Burkhalter dated January 30, 1975.

76. Mr. Stetson's graphs and curves do not show a break point at 50 pounds of BOD per ton of pulp, and these graphs and curves lend no support to the number 50. Rather, the graphs which Mr. Stetson prepared show a break in the curve plotting BOD discharged versus waste flow treated at 86 pounds of BOD per ton of pulp. Below 86 the flow being treated and hence the cost of treatment, increased.

77. Mr. Stetson advised Mr. Burkhalter that the BOD number in the permit should be 50 for "totally subjective" reasons. Mr. Stetson's opinion did not form the sole basis for DOE's decision, but it was a part of the decision-making process.

78. DOE failed to demonstrate that reducing the BOD from 211 to 50 pounds of BOD per ton of pulp justified the costs of treatment, the adverse non-water quality environmental impacts, the drain on scarce

energy resources, and the economic considerations involved.

79. The term pH is an expression of the relative acidity or alkalinity of an aqueous solution. At a pH of 7 the solution is neutral. Lower pH values indicate acidity, while higher pH values indicate alkalinity. The pH of an effluent waste stream from a facility is adjusted by adding chemicals to the waste stream to make the effluent more acid or alkaline.

80. The wastes discharged by Scott's Everett facility are relatively acid. In order to meet the pH range of 6.0 to 9.0, which is required by Special Condition S3 of the permit, Scott would have to neutralize its effluent by the addition of sodium hydroxide or some other alkaline substance.

81. The additional annual operating costs for pH adjustment at Scott's Everett facility in order to comply with the terms of the permit at the permit level of 50 pounds of BOD would be $94,000 with the largest component being the cost of the chemicals required for neutralization.

82. The DOE did not make any estimate of the operating costs (including the costs of chemicals) of the pH adjustment.

83. pH in the receiving waters outside the ranges of 6.0 to 9.0 may be toxic to aquatic life.

Respondent's Exhibit R-1A, which is a document prepared by EPA, provides that discharges outside of the range of pH 6 to pH 9 are permissible if they can be justified taking into account the buffering capacity of the receiving waters.

84. pH data taken by Allen Moore, who is an employee of the DOE,

in 1974 and 1975, establishes that: (1) the pH of the receiving waters into which effluent from Scott's Everett facility is discharged is well within the normal range of 6.0 to 9.0; (2) the buffering capacity of the receiving waters is great; and (3) the pH of these waters is not adversely affected by the relatively acid effluent being discharged by Scott's Everett facility at the present time.

85. Wastes are discharged from Scott's Everett facility through four diffusers. One is a deepwater diffuser (001) operated jointly with the Weyerhaeuser Company discharging into Port Gardner Bay, with 1,000 feet of diffuser section at the end of a pipe extending 2,000 feet out from shore. The diffuser section lies at the bottom at a depth of 300 to 340 feet. The other three diffusers (002, 003, and 004) discharge into inner Everett harbor adjacent to the mill site. Process wastes are discharged at an average rate of approximately 60,000,000 gallons per day.

86. The permit authorizes continued use of diffuser 001, through which Scott now discharges approximately 10,000,000 gallons per day. The remaining wastes are to be discharged through "an adequately designed" diffuser outfall system. The determination of what is adequate will not be made until the Department reviews the engineering plans for approval as required by the permit. Scott has appealed this provision of the permit.

87. Scott is considering the possibility of constructing a new diffuser to serve treatment facilities required by this permit. It is also possible that Scott could meet the effluent limitation of the permit while still discharging untreated wastes through its inner harbor

diffusers.

88. The conclusion reached in a CH_2M Hill study is that the diffusers presently employed at Scott's Everett facility are in compliance with all criteria established by the DOE and disperse the present volume of effluent into the waters in a reasonable and adequate way.

89. The present permit requires Scott to employ a direct method of BOD monitoring by which Scott would determine how much dissolved oxygen is taken from a test solution. We do not find this requirement to be unreasonable. Moreover, it is Scott which must show that its presently employed method is reliable for the purpose of BOD monitoring at the levels anticipated. This it has not done.

90. Toxicity monitoring similar to that required by Condition S7.a. of the permit is required by the State of California, the Province of British Columbia, and the Federal Government of Canada. The State of Washington has also included similar provisions as an effluent limitation in NPDES permits for other types of pulp mills. This test will be useful in regulating the efficiency of a biological treatment plant. DOE's inclusion of Condition S7.a. within the permit serves a useful purpose and is reasonable.

91. The permit contains no definition of what constitutes "hazardous substances" within the meaning of this provision.

92. DOE has not adopted any general regulations which define the term "hazardous substances," and there is no commonly understood meaning of the term "hazardous substances" in the context of the substances which are used in Scott's Everett facility.

93. It would take 36 months from the date on which Scott's final decision is made to install the stage II SWL removal system until that system could be placed in operation.

94. The design and construction of a secondary treatment (biological) system would take approximately 30 months to accomplish.

95. Any Conclusion of Law which should be deemed a Finding of Fact is hereby adopted as such.

From these Findings, the Pollution Control Hearings Board comes to these

CONCLUSIONS OF LAW

1. DOE is authorized to administer an NPDES permit program by RCW 90.48.260. Under this section and applicable DOE regulations, DOE's participation in this Federal-State program is governed in part by provisions of the Federal Water Pollution Control Act and regulations of the United States Environmental Protection Agency.

2. The standards governing the determination of effluent limitations for this permit are those contained in sections 301(a) and (b), 304(b), 402 and the applicable definitions of section 502 of the Federal Water Pollution Control Act Amendments of 1972. These sections basically require that this permit incorporate effluent limitations based upon "best practicable control technology currently available" (BPCTCA). The determination of BPCTCA at the time of issuance of this permit was the responsibility of DOE.

3. The intent of the Federal Water Pollution Control Act Amendments of 1972 is to require nationally uniform effluent limitations with a limited amount of local flexibility. This is accomplished by

first determining a range of BPCTCA based upon consideration of the factors in section 304(b) of the Act as they apply to industrial categories or classes. In determining the effluent limitations applicable to a specific mill, the section 304(b) factors are again considered as they apply at that mill for the purpose of determining which effluent limitation within the previously determined range of BPCTCA should apply.

4. The quality of the receiving waters and the expected impacts of any particular discharge upon these waters is not to be considered in determining the effluent limitations required under the Federal Water Pollution Control Act, except that potential violations of water quality standards may be considered and may lead to more stringent limitations than would otherwise be based upon BPCTCA.

5. The best practicable control technology will normally consist of the average of the best existing treatment technology being practiced within any industrial category. However, if existing practices are uniformly inadequate, then it may consist of technology proven by pilot plant studies or other means. American Meat Institute v. EPA, 8 ERC 1369, 1377 (7th Cir. 1975).

6. Scott contends that BPCTCA requires only the removal of about 80 percent SWL from its waste streams before discharge into the receiving waters. DOE, on the other hand, contends that BPCTCA must include secondary treatment.

DOE's action must be reviewed to ascertain the grounds upon which its decision was made. The reasons for the decision must be clear and reasonable. "After the fact rationalization by counsel in brief and

argument does not cure non-compliance by the agency with the stated principles." Dupont v. Train, 8 ERC 1718, 1720 (4th Cir. 1976). We should not substitute our judgment for the agency charged with the management of this state's environment, but rather, determine whether or not an error has been made based upon the preponderance of the evidence. In order for DOE to accomplish its tasks, it must transform a complex and sometimes ambiguous statute into effluent limitations applicable to a specific mill. In the words of the Court in Dupont v. Train, supra, 8 ERC 1721, "Ambiguity must be transformed into practicality." The construction placed upon an ambiguous statute by the agency charged with its administration, while not binding, is entitled to considerable weight. Weyerhaeuser v. Department of Ecology, 86 Wn.2d 310, 315 (1976).

In our analysis of the problem of what is BPCTCA, we begin with the basic statute.

> Except as in compliance with this section . . . the discharge of any pollutant by any person shall be unlawful.

Section 301(b) provides in part that:

> In order to carry out the objective of this chapter there shall be achieved--
>
> (1)(A) not later than July 1, 1977, effluent limitations for point sources . . . which shall require the application of the best practicable control technology currently available as defined by the administrator pursuant to section 304(b) of this title . . . .

Section 304(b) provides in part that:

> For the purpose of adopting or revising effluent limitations under this chapter the Administrator shall . . . publish within

> one year of October 18, 1972, regulations, providing guidelines for effluent limitations . . . . Such regulations shall--
>
> (1)(A) identify, in terms of amounts of constituents and chemical, physical, and biological characteristics of pollutants, the degree of effluent reduction attainable through the application of the best practicable control technology currently available for classes and categories of point sources . . .; and
>
> (B) specify factors to be taken into account in determining the control measures and practices to be applicable to point sources . . . within such categories or classes. Factors relating to the assessment of best practicable control technology currently available to comply with subsection (b)(1) of section 301 of this title shall include consideration of the total cost of application of technology in relation to the effluent reduction benefits to be achieved from such application, and shall also take into account the age of equipment and facilities involved, the process employed, the engineering aspects of the application of various types of control techniques, process changes, non-water quality environmental impact (including energy requirements), and such other factors as the Administrator deems appropriate.

In American Iron and Steel Institute v. EPA, 8 ERC 1321 (3d Cir. 1975) the Court interpreted sections 301 and 304 in the following manner:

> [The] section 301 limitations represent both the base level or minimum degree of effluent control permissible and the ceiling (or maximum amount of effluent discharge) permissible nationwide within a given category, and the section 304 guidelines are intended to provide precise guidance to the permit-issuing authorities in establishing a permissible level of discharge that is more stringent than the ceiling. 8 ERC 1330 (Emphasis by the Court).

Section 301(b) limitations represented, to the Court, a single number

effluent limitation. 8 ERC 1330. To determine what this maximum single number should be, it must first be determined what control technology is BPCTCA for the class or category of point sources in question.[3] After considering the evidence regarding the technology presently available and the evidence showing consideration of the section 304(b) factors as applied to the technology, we must conclude that BPCTCA includes treatment beyond SWL removal. The evidence shows that the technology of secondary treatment is known throughout the industry and practiced by approximately 25 percent of the mills within the industrial category of Scott's Everett facility. Also, the WAPORA document (Respondent's Exhibit R-2), prepared after the FWPCA amendments of 1972, reports that two mills surveyed employed secondary treatment. Before the passage of the FWPCA amendments, EPA published a "Guidance" document. The Guidanc document is now used to aid permit issuing authorities during the interim before the final guidelines are promulgated. In the Guidance document, the use of secondary treatment at sulfite mills is further documented. In the face of this evidence, and in view of Conclusion of Law 5, we conclude that DOE reasonably determined that secondary treatment is the minimum level of control which must be applied by paper grade sulfite mills to be consistent with section 301. The evidence also shows that the next higher level of treatment, i.e., tertiary treatment, would produce an additional degree of effluent reduction wholly out of proportion to the costs of achieving such marginal level of reduction.[4] By requiring a level of discharge based on the application of secondary treatment as the required minimum level of technology, national uniformity among the various point sources within

a category or class can be maintained.

Having concluded that secondary treatment is the minimum level of control permissible as applied to paper grade sulfite mills under the applicable Federal law, we now turn to the range determined by DOE as applicable to paper grade sulfite mills. DOE first determined that the establishment of a range of permissible discharges (presumably including the maximum level of discharge permissible under section 301) was an appropriate interpretation of the Federal law. This interpretation is reasonable.[5] Using this interpretation, DOE established a range of BPCTCA for paper grade sulfite mills based upon the effluent limitations achieved by an average of the best existing treatment technology being practiced within that category (35 pounds BOD) and that average of the best of the dissolving grade sulfite mills (60 pounds BOD). These precise numbers were taken from EPA's single number limitations in the Guidance document. Because paper grade sulfite mills as a class have less BOD wastes than dissolving grade sulfite mills, DOE determined that the upper range for the paper grade sulfite mills should not exceed the average of the best existing dissolving grade sulfite mills. While this conclusion is possibly true, there was no evidence that the upper number of the purported range, i.e., 60, was established with respect to paper grade sulfite mills[6] and there was evidence that the upper number might be as high as 86.[7] The mere subcategorization of the pulp mills will not, by itself, provide a "range" for paper grade sulfite mills pursuant to the FWPCA amendments of 1972 in this instance. American Iron and Steel Institute v. EPA, 8 ERC 1321, 1330-1331 (3d Cir. 1975). But see Dupont v. Train, 8 ERC 1718, 1723 (4th Cir. 1976). In particular, the method

used by DOE ignores the application of the section 304(b) factors in the determination of the range. We can find no basis upon which we may conclude that DOE properly determined a base level pursuant to section 301 or range pursuant to section 304(b). We therefore remand for reconsideration of the appropriate range for paper grade sulfite mills based upon the application of the section 304(b) factors to the section 301 maximum allowable effluent discharge permissible (base level) using the application of secondary treatment.

After the range is established, DOE must again apply the section 304(b) factors to arrive at a specific number for a specific mill.[8] See Grain Processing Corp. v. Train, 8 ERC 1561, 1566 (S.D. Iowa 1976). As indicated in our Findings, DOE did not adequately consider the section 304(b) factors in making its determination that th permit effluent limitation should be 50 pounds of BOD for the Everett facility. We fully appreciate the circumstances surrounding the development of this permit and pressure brought upon DOE to process many other NPDES permits for different classes and categories of point sources. In the exercise of its duties, DOE should nonetheless maintain a record adequately documenting the basis for its decision. In so doing, DOE need not quantify the unquantifiable. But as to those substantial factors capable of quantification, some reasonable attempt should be made, including a cost/benefit analysis. "In acting on permit applications, the issuer will properly consider cost/benefit analysis along with the other factors specified in section 304(b)." Dupont v. Train, supra, 8 ERC 1724. The cost/benefit analysis need not dwell on the minutiae, but a reasonable effort by the agency based upon

sufficient information is required.[9] See FMC Corp. v. Train, supra, 8 ERC 1735. In this matter, DOE made no cost/benefit analysis and, in light of the showing by Scott (e.g., Scott Exhibit 7, Coughlan Exhibit 15), the record does not otherwise show that DOE's decision was reasonable. We remand for the determination of the precise effluent discharge limitation based upon section 304(b) factors, within the range to be determined, in light of the evidence adduced at the hearing and our findings thereon, and such further information which appellant contends is significant.[10]

7. The permit's effluent limitations covering suspended solids should be vacated and remanded for reissuance in accordance with our disposition of the BOD issue in this matter. Because the quality of the receiving waters is irrelevant and Scott has not persuaded us that DOE has materially erred, the pH limitations should be affirmed.

8. BOD, suspended solids and pH are all parameters upon which effluent limitations may be based under the Federal Water Pollution Control Act. Section 509(14). FMC Corp. v. Train, supra, 8 ERC 1738. There is no requirement that DOE demonstrate an adverse impact upon water quality before restricting any parameter in an NPDES permit.

9. The information DOE considered prior to issuance of the permit was incomplete. Moreover, the failure of DOE to adequately document the consideration of many factors led to error in the setting of permit conditions.

10. DOE is required to certify that NPDES permits will not authorize a violation of water quality standards. This requirement, together with the possibility that Scott will construct a new diffuser,

justify the permit requirement for an adequately designed outfall diffuser system, and Condition S4.b. should be affirmed. The adequacy of any particular diffuser is not before us at this time.

11. The monitoring requirements of permit Condition S5.e. are those required by Federal regulations and should be affirmed. The toxicity monitoring requirement of Condition S7.a. of the permit should be affirmed.

12. Condition S7.b. of the permit should be vacated because there is no definition of "hazardous substances" designated by regulation. U.S. v. Ohio Barge Lines, 8 ERC 1205 (W.D. La. 1975).

13. All other provisions of the permit covered by this appeal should be affirmed in all respects, provided that the compliance dates shall be extended to reflect the time taken for this appeal. The is no authority enabling us to further extend compliance schedules beyond the July 1, 1977 deadline. See State Water Control Board v. Train, 8 ERC 1609 (E.D. Va. 1976).

14. Any Finding of Fact which should be deemed a Conclusion of Law is hereby adopted as such.

From these Conclusions, the Pollution Control Hearings Board enters this

ORDER

1. That the determination by DOE that BPCTCA at paper grade sulfite mills includes secondary treatment is affirmed.

2. That the specific numerical limitations for BOD and other conditions of the permit based thereon are vacated and this matter is remanded to DOE with instructions to consider the NPDES permit in a

manner not inconsistent herewith.

3. That the "hazardous substances" condition set forth in the permit is vacated.

4. That DOE reissue the permit extending the compliance date as may be necessary to reflect the time taken for this appeal and for its reconsideration of the permit.

5. That all other provisions of the permit should be, and hereby are, affirmed in all respects.

DONE at Lacey, Washington, this 4th day of June, 1976.

POLLUTION CONTROL HEARINGS BOARD

Chris Smith
CHRIS SMITH, Chairman

W. A. Gissberg
W. A. GISSBERG, Member

Walt Woodward
WALT WOODWARD, Member

---

1. Because there are no EPA regulations, there need not be, strictly speaking, any variance from such regulations which concern us. The "fundamental difference" referred to above is referenced to the single number standard suggested in EPA's "Guidance" document adopted by DOE. The simultaneous existence of the base level and range concept of the American Iron and Steel Institute Court and a variance procedure from the promulgated regulations using single number effluent limitations are not necessarily inconsistent with each other. American Iron and Steel Institute v. EPA, 8 ERC 1321, 1339 (3d Cir. 1975). Using the base level and range concept, there may be an occasion in which a point source may be "fundamentally different" from the base level determined by the agency for a particular class or category. Whether or not a difference does exist, or matters in the final instance, cannot be determined until DOE has first established what the base level is for a class or category. In either case, when faced with a claim of a "fundamental difference," DOE could gather and analyze data itself or, alternatively, require the applicant to justify a higher effluent discharge from the most stringent level. See American Meat Institute v. EPA, 8 ERC 1369, 1373, n.14 (7th Cir. 1975).

2. Scott has shown that the data DOE relied on in the Guidance document (R-1) and the WAPORA document (R-2) does not account for limited land or soil conditions. With respect to a similar problem concerning EPA regulations, see American Iron and Steel Institute v. EPA, 8 ERC 1321, 1333, 1349 (3d Cir. 1975). Therein, EPA's response to similar contentions was that "to the extent that a particular plant's inability to comply with an effluent limitation is attributable to the fact that it is operating under conditions 'fundamentally different' than the surveyed plants, it could obtain a variance." 8 ERC 1333. Here, Scott has not been offered any similar dispensation by DOE or EPA.

3. Because EPA has not yet issued regulations pursuant to section 301 and 304 that address the question of BPCTCA, DOE must proceed, as best it can, to issue a permit under section 402 albeit on an ad hoc basis. By considering all factors under section 304(b) DOE can then issue a permit that is likely to conform with the effluent limitations and guidelines finally issued.

4. Respondent would agree with this statement. Respondent's Exceptions, pages 28 to 29. Once the BPCTCA maximum level of discharge is ascertained, there is no longer the need to determine whether the cost is wholly out of proportion to the next degree of treatment. When the maximum level of discharge and range are determined, DOE need only consider the section 304(b) factors to arrive at a precise number for a specific mill. See text, infra.

5. This is not to say that a single number effluent limitation would be improper in an appropriate case. See FMC Corp. v. Train, 8 ERC 1731, 1734 (4th Cir. 1976); Dupont v. Train, 8 ERC 1718, 1723 (4th Cir. 1976).

6. Indeed, counsel for respondent argued that 60 pounds of BOD "may even be too high." Memorandum of Respondent, page 23. Counsel would in argument appear to agree that the purported range is yet undetermined. If the particular class or category were individually considered, DOE's determination could be given greater weight.

7. Scott has shown, using a cost/benefit approach and secondary treatment, that as to its Everett facility the BOD limitation should not be more stringent than 86 pounds per ton. In light of this showing and DOE's failure to otherwise support its determination, any presumption of correctness which we could allow DOE in its determination of 60 pounds of BOD as the upper limit must vanish.

8. With regard to the factor of costs, the Court in American Iron and Steel Institute concluded:

> Nevertheless, while costs were intended to be given greater weight in defining "BPCTCA," it is clear that even with that 1977 standard, the cost of compliance was not a factor to be given primary importance. Furthermore, Congress clearly intended that the Administrator consider costs on a class or category basis, rather than as a plant-by-plant basis. As Senator Muskie stated in support of the House-Senate Conference Committee Report:
>
> > "The modification of subsection 304(b)(1) is intended to clarify what is meant by the term 'practicable.' The balancing test between total cost and effluent reduction benefits is intended to limit the application of technology only where the additional degree of effluent reduction is wholly out of proportion to the costs of achieving such marginal level of reduction for any class or category of sources. "The Conferees agreed upon this limited cost-benefit analysis in order to maintain uniformity within a class and category of point sources subject to effluent limitations and to avoid imposing on the Administrator any requirement to consider the location of sources within a category or to ascertain water quality impact of effluent controls, or to determine the economic impact of controls on any individual plant in a single community." 8 ERC 1334 (n. omitted, emphasis by the Court).

The above quotation relates to a specific section 304(b) factor, i.e., cost, which was discussed by the Court in its analysis of EPA's responsibilities under the Act. In this matter, DOE (as would EPA) must determine the section 301(b) maximum effluent discharge allowable by the application of BPCTCA to the category of paper grade sulfite mills. This is yet to be done. Notably, the application of the section 304(b) factors to a specific mill by the permit issuing authority was not the concern of the American Iron and Steel Institute Court or the above-quoted report.

9. DOE may require the information from the applicant. See footnote 1 supra.

10. In establishing a range for paper grade sulfite mills, a provision for a "fundamental difference" exception may have to be provided if a specific mill is not properly within a particular category due to unique circumstances.